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$$Q = I / f = (C_1 + C_2 + C_{coupling})V_{dd} \quad \text{(Equation 2)}$$

The measurement proceeds by applying for a sufficiently large number of cycles a periodic signal to V_3, having the same frequency as the signal applied to V_1, V_2. The relative rise and fall times of the external signals do not matter.

In the Claims:

Please cancel claims 1-14 without prejudice.

Please add new claims 15-57:

No marked-up version is required for new and canceled claims under 37 C.F.R. § 1.121(c).

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15. (New) A method for measuring cross-coupling capacitance, comprising:

providing at least first and second wires;

charging the first wire to a predetermined voltage;

performing a first measurement associated with a capacitance of the first wire;

charging the second wire to the predetermined voltage;

recharging the first wire to the predetermined voltage;

performing a second measurement associated with a capacitance of the first wire; and

calculating a difference between the first and second measurements to determine the cross-coupling capacitance between the first and second wires.

16. (New) The method of claim 15, further including coupling a first transistor between a supply voltage and a common node, coupling a second transistor in series with the first transistor between the common node and ground, wherein the first wire is coupled to the common node.

17. (New) The method of claim 16, further including applying a first periodic signal to a gate of the first transistor and a second periodic signal to a gate of the second transistor, to periodically charge and discharge the first wire.

18. (New) The method of claim 17, wherein the first periodic signal and the second periodic signal are timed so that the first and second transistors are not activated simultaneously.

19. (New) The method of claim 15, further including discharging the first wire prior to recharging the first wire.

20. (New) The method of claim 15, further including discharging the second wire prior to charging the first wire.

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21. (New) The method of claim 15, further including measuring each of the cross-coupling capacitances for multiple neighbor wires to the first wire.

22. (New) The method of claim 21, wherein measuring the cross-coupling capacitance for the neighbor wires is performed using a same technique as used to measure the cross-coupling capacitance between the first wire and the second wire and using the same transistor configuration.

23. (New) The method of claim 16, further including using the first transistor and second transistor in conjunction with the first wire to measure each cross-coupling capacitance of multiple neighbor wires to the first wire.

24. (New) The method of claim 23, wherein the multiple neighbor wires are in an integrated circuit with multiple metal layers and the neighbor wires can be on any layer and in any orientation relative to each other and to the first wire.

25. (New) The method of claim 15, further including repeating the charging of the first and second wires, repeating the first and second measurements over a number of cycles and calculating an average of the measurements to calculate the difference.

26. (New) The method of claim 15, wherein performing the first and second measurements includes measuring an amount of charge used to charge the first wire to the predetermined voltage.

27. (New) The method of claim 16, further including coupling an ammeter in series with the first and second transistors, and wherein the first and second measurements include measuring a current needed to charge the first wire to the predetermined voltage.

28. (New) The method of claim 15, wherein the first and second wires are unconnected and further including coupling logic to the second wire to charge and discharge the second wire.

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29. (New) The method of claim 28, wherein the logic is an inverter.

30. (New) The method of claim 15, wherein the cross-coupling capacitance is calculated between the first and second wires using only a single ammeter.

31. (New) The method of claim 15, wherein the predetermined voltage is a logic high voltage level.

32. (New) The method of claim 17, further including:

a) grounding the second wire for a first period of time;

b) during the first period of time, applying the first periodic signal to the gate of the first transistor and the second periodic signal to the gate of the second transistor to charge and discharge the first wire, wherein the first and second transistors are not activated simultaneously;

c) repeatedly performing the first measurement during the first period of time and averaging a result of the first measurement;

d) wherein the charging of the second wire occurs for a second period of time;

e) during the second period of time, applying the first periodic signal to the gate of the first transistor and the second periodic signal to the gate of the second transistor to charge and discharge the first wire, wherein the first and second transistors are not activated simultaneously;

f) repeatedly performing the second measurement during the second period of time and averaging a result of the second measurement; and

g) wherein calculating the difference between the first and second measurements includes taking the difference between the averaged results of the first and second measurements.

33. (New) The method of claim 16, further including using the first transistor and second transistor in conjunction with the first wire to measure each cross-coupling capacitance of multiple neighbor wires to the first wire and wherein the measurements of each cross-coupling capacitance is accomplised with one library element.

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34. (New) The method of claim 15, further including:

a) measuring each of the cross-coupling capacitances for multiple neighbor wires to the first wire;

b) charging the multiple neighbor wires to a high voltage level;

c) measuring a capacitance to ground for the first wire; and

d) adding the capacitance to ground measurement to the cross-coupling capacitance measurements to determine the total capacitance associated with the first wire.

35. (New) A circuit for measuring cross-coupling capacitance, comprising:

first and second transistors coupled in series;

an ammeter coupled in series with the first and second transistors;

a first wire coupled between the first and second transistors;

a second wire unconnected to the first wire, but in fixed relation to the first wire such that a cross-coupling capacitance is created between the first and second wires; and

wherein the cross-coupling capacitance is measured between the first and second wires by subtracting two capacitance-related measurements associated with the first wire, one of the measurements being performed with the second wire at a first voltage level and the other of the measurements being performed with the second wire charged to a second voltage level.

36. (New) The circuit of claim 35, wherein the first voltage level is ground and the second voltage level is a logic high.

37. (New) The circuit of claim 35, further including logic coupled to the second wire for charging and discharging the second wire.

38. (New) The circuit of claim 37, wherein the logic includes an inverter.

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39. (New) The circuit of claim 35, wherein the first and second transistors each have source-to-drain paths, wherein the source-to-drain paths of each transistor are coupled in series between power and ground, with gates of the first and second transistors coupled to different periodic signals for controlling the charging and discharging of the first wire.

40. (New) The circuit of claim 39, wherein the periodic signals are timed such that the first and second transistors are not activated simultaneously.

41. (New) The circuit of claim 35, wherein the first and second wires can be in any configuration to each other including being in parallel to each other.

42. (New) The circuit of claim 35, wherein only one ammeter is used in the measurement of the cross-coupling capacitance.

43. (New) The circuit of claim 35, further including measuring the cross-coupling capacitance for multiple neighbor wires to the first wire.

44. (New) The circuit of claim 43, wherein measuring the cross-coupling capacitance for the neighbor wires is performed using a same technique as used to measure the cross-coupling capacitance between the first wire and the second wire and using the same transistor configuration.

45. (New) The circuit of claim 43, wherein the multiple neighbor wires are in an integrated circuit with multiple metal layers and the neighbor wires can be on any of the metal layers and in any orientation relative to each other and relative to the first wire.

46. (New) The circuit of claim 35, further including using the first transistor and second transistor in conjunction with the first wire to measure each cross-coupling capacitance of multiple neighbor wires to the first wire and wherein the measurements of each cross-coupling capacitance is accomplised with one library element.

47. (New) A circuit for calculating a cross-coupling capacitance, comprising:

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means for charging and discharging a first wire;

means for measuring charge on the first wire in order to calculate capacitance associated with the first wire;

means for charging and discharging a second wire; and

means for calculating a cross-coupling capacitance by measuring charge needed to charge the first wire to a predetermined voltage with the second wire grounded and measuring charge needed to charge the first wire to the predetermined voltage with the second wire charged to the predetermined voltage and taking a difference between the two measurements.

48. (New) The circuit of claim 47, wherein the means for charging the second wire includes logic means.

49. (New) The circuit of claim 47, wherein the means for measuring charge includes an ammeter.

50. (New) The circuit of claim 47, wherein the means for charging and discharging the first wire includes serially coupled transistor means, wherein the first wire is coupled between the serially coupled transistors.

51. (New) A method for determining cross-coupling capacitance, comprising:

applying a first periodic signal to a gate of a first transistor coupled between a supply voltage and a common node;

applying a second periodic signal to a gate of a second transistor coupled between the common node and ground;

using the first and second periodic signals, charging and discharging a first wire coupled to the common node for a period of time;

applying a third periodic signal to charge and discharge a second wire that is in cross-coupling relationship with the first wire;

measuring a first charge that is deposited on the first wire over the period of time, the first charge being measured each time the second wire is grounded;

measuring a second charge that is deposited on the first wire over the period of time, the second charge being measured each time the second wire is charged to the supply voltage; and

calculating a difference between the first and second charge to determine the cross-coupling capacitance.

52. (New) The method of claim 51, wherein a single ammeter is used to calculate the cross-coupling capacitance.

53. (New) The method of claim 51, further including measuring each of the cross-coupling capacitances for multiple neighbor wires to the first wire.

54. (New) The method of claim 51, wherein measuring the cross-coupling capacitance for the neighbor wires is performed using a same technique as used to measure the cross-coupling capacitance between the first wire and the second wire and using the same transistor configuration.

55. (New) The method of claim 51, wherein the multiple neighbor wires are in an integrated circuit with multiple metal layers and the neighbor wires can be on any of the metal layers and in any orientation relative to each other and to the first wire.

56. (New) The method of claim 51, wherein the third periodic signal is applied to an inverter that charges and discharges the second wire.

57. (New) The method of claim 51, wherein a timing of the periodic signals is such that the first and second transistors are not activated simultaneously.

Respectfully submitted,

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